APPENDIX 14: SOIL STANDARDS

The following Table displays the soil resource parameters that must be addressed by the rangeland health standards, as identified in 43 CFR 4181.2; and shows whether they are addressed by the Soils Standards in the different alternatives in Chapter 2. The standards listed are the Soil Standards for the individual RACs, from Alternative 1; the State-wide Soils Standard from Alternative 2; and the "Fallback Standard" from Alternative 3. The Standard used in Alternative 4 is identical to the State-wide Standard in Alternative 2 and is not listed on the Table. The Standard used in Alternative 5 is identical to Alternative 1 except as described below for Susanville RAC area, and where different is indicated by an "X."

SOIL STANDARDS, COMPARISON OF THE PROPOSED CONTENTS					
ITEM	UKIAH RAC	SUSAN-VILLE RAC	BAKERS-FIELD RAC	FALLBACK STANDARDS	STATE-WIDE STANDARDS
infiltration	Y	Y	Y	Y	Y
permeability	Y	Y	[1]	Y	Y
fertility	Y	Y	Y	[1]	Y
biological function	Y	Y	Y	[1]	Y
chemical function		Y			
physical function	Y	Y	Y	[1]	Y
erosion	Y	Y	Y		Y
litter	Y	X[2]	Y		Y
crusting-biological	Y		Y		Y
crusting-physical	Y		Y		Y
ground cover	Y	X[2]	Y	[1]	Y
compaction	Y		Y		Y
structure					Y
vegetation-diversity	Y	Y	Y	Y	Y
root depths	Y		Y		Y

1 -- Mentioned in Guidelines.

2 -- These apply only to Alternative 5, not Alternative 1

This comparison of the various soil properties or functions shows that each RAC proposal meets or exceeds the minimum standards presented in the Fallback standard with one exception. The Bakersfield RAC proposal does not refer to soil permeability in the standards; however it does in the guidelines.

Alternative 1: RAC Standards

Susanville RAC Standard

The standard for this proposal addresses some of the soil quality issues which influence watershed function. The standard specifically mentions infiltration and permeability; the biological, chemical and physical functions; adequate erosion protection; and soil fertility appropriate for the soil type. Criteria for measuring compliance with the standard is wind or water erosion evidence; vegetation vigor, age diversity, and composition diversity. Vegetation which reflects the potential natural vegetation or desired plant community for the site is another soil criteria. Conspicuously absent is any mention of litter cover, soil crusts (either biological or structural), or soil compaction.

This standard appears to minimally address the issues presented in the Fallback Standard. Issues which are not specifically addressed are surface litter, soil compaction and surface crusts. In the drier regions of the Susanville RAC area surface crusts are an important issue which influence infiltration, seed germination and susceptibility to wind erosion. Ignoring this issue may result in resource degradation.

Ukiah RAC Standard

The standard for this proposal specifically addresses all the soil properties which influence watershed function. Indicators of full function include ground cover, litter, plant species diversity, diverse root depths, vigorous plant growth, minimal evidence of accelerated erosion, absence of surface crusts or compaction layers and intact biological crusts.

This standard appears to meet or exceed those defined for the Fallback Standard and, if followed by those responsible for managing the resources, will improve or protect the soil resources.

Bakersfield RAC Standard

The standard for this proposal addresses all of the issues presented in the fallback standard except permeability; however physical function is mentioned. Indicators of full function include ground cover, litter, biological and physical characteristics, adequate erosion protection, fertility, plant diversity, root depth diversity, vigorous plants, absence of physical crusts or compaction layers, and intact biological crust.

This standard appears to meet or exceed those defined for the Fallback Standard and, if followed by those responsible for managing the resources, will improve or protect the soil resources.

Alternative 2: Statewide Standard

This alternative proposes a single, state-wide standard and would use the individual RAC guidelines. The standard is comprehensive and addresses all of the soil resource issues presented in all other standards.

This alternative incorporates the missing elements -- soil crusts, soil compaction and litter -- into the Susanville RAC geographic area. Since the Susanville guidelines contain all the livestock management tools necessary to achieve these standards, this alternative would adequately protect or initiate movement toward improvement of the soil resource throughout the geographic area covered by this document if implemented by resource managers.

Alternative 3: Fallback Standard

These standards are general and fail to mention some important issues addressed by the locally developed standards of the individual RACs. Erosion is not mentioned in this standard, although this fact is mitigated by the term "soil stability" which is a less commonly used reference than erosion. Litter, physical and biological crusts and compaction are not specifically mentioned in the fallback standard, however "physical condition" is referred to in the guidelines. The general nature and omission of some specific soil parameters important to watershed function may make this standard less successful at improving or protecting the soil resources than Alternative 2.

Alternative 4: Rapid Improvement Standard

This alternative proposes a single, state-wide standard that is the same as that in Alternative 2. The standard is comprehensive and addresses all of the soil resource issues presented in all other standards.

Alternative 5: Preferred Alternative (modification of Alternative 1)

This alternative is similar to Alternative 1 but includes modifications which incorporate Draft EIS comments, RAC modifications, and modifications suggested by BLM staff. Specifically, the following criteria was added to the Susanville RAC Standard 1: "Ground cover (vegetation, litter, and other types of ground cover such as rock fragments) is sufficient to protect sites from accelerated erosion."

This modification addresses the shortcomings of Alternative 1 discussed under Alternative 1, Susanville RAC Standards, above. Management for adequate soil cover will protect the soil from accelerated erosion, improve seed germination, reduce crusting and improve infiltration.